Exhibit A

Application No.	:	10/687,242	Confirmation No. 9404
Applicant	:	BREAULT, Richard D.	
Filed	:	10/16/2003	
TC/A.U.	:	1745	
Examiner	:	WANG, Eugenia	
Docket No.	:	C-3144	
Amendment Dated	:	June 15, 2007	

DECLARATION RESPONSIVE TO MARCH 16, 2007 SECOND OFFICE ACTION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

I, Richard D. Breault, a resident of North Kingstown, Rhode Island, being a consultant for the owner of all rights in the above referenced patent application, UTC FUEL CELLS, LLC, of South Windsor, Connecticut, and also being a joint inventor of the above referenced patent application, do hereby declare as follows:

1. My education consists of a BS degree in Chemical Engineering from the University of Connecticut in 1964.

2. I am currently self-employed and working as a consultant for UTC Fuel Cells LLC of South Windsor, CT. I was employed, by various divisions of United Technologies Corporation, from June of 1964 to February of 1997 doing research and development on fuel cells. I have developed fuel cells based on alkaline electrolytes, acid electrolytes, on

molten carbonate electrolytes and on solid polymer electrolytes. I am the inventor or co-inventor over sixty-five fuel cell related patents.

3. With respect to the above referenced Second Office Action, I have read the Examiner's statement at pages 4-5 that: "Further regarding the insulator, Morrow et al. teaches its purpose, which is restricting of heat from the fuel stack though the current collectors (column 5, lines 35-38). Therefore, it is inherent that total heat transfer rate across the insulator from the end cell [is] no greater than the heat generated by the end cell." This conclusion of the Examiner is elaborated upon page 19 as follows:

> As to claim 22, Applicant argues Morrow et al. does not teach the fact that the total rate of heat transfer across the insulator from the end cell is no greater than heat generated by the end cell. Examiner respectfully disagrees that this limitation is not covered by Morrow et al. Although not specifically stated, materials that insulators are made out of inherently absorb heat. Therefore, it is inherent that the heat transferred across the insulator would be less than that of the heat generated by the end cell. Additionally, the insulator cannot transmit more heat than is generated by the end cell, as it does not generate heat itself to transfer.

4. I disagree with those conclusions of the Examiner for the following reasons.

5. Fourier's Law of thermal conduction states that the heat flux across a material is equal to the thermal conductivity of the material multiplied by the temperature differential across the material and divided by the thickness of the material. The thermal conductivity is an intrinsic characteristic of a material whereas the thickness is a design specific feature. All independent claims (claims 1, 22, and 25) of the above referenced application specify both the thickness and also the thermal conductivity of the insulation so that as the result of the limits of both of those factors, the heat transfer by conduction across the insulation is less than the heat generated by an end cell. In independent claim 1, the thermal conductivity of the insulator is "no greater than 0.100 Watts per meter per degree Kelvin", and the insulator has a thickness "of less than 20 millimeters". In claim 5, dependent on claim 1, a preferred thermal conductivity of "no greater than 0.010 Watts per meter per degree Kelvin" is claimed. In claim 4, dependent on claim 1, a most preferred thermal conductivity of "no greater than 0.005 Watts per meter per degree Kelvin" is claimed.

6. These varying claimed thermal conductivity and thickness characteristics of the insulator claim structures that are designed to have specific properties relative to heat generation in a single end cell. Those claimed specific properties do not arise inherently from the fact that "materials that insulators are made out of inherently absorb heat", as asserted by the Examiner. That is because the specific, claimed characteristics of thermal conductivity and thickness are

neither shown nor suggested singly standing alone, or in combination with each other, as in the independent claims of the above referenced application.

7. With respect to the Examiner's assertion quoted above that: "Additionally, the insulator cannot transmit more heat than is generated by the end cell, as it does not generate heat itself to transfer", it is pointed out that in the specification of the application at page 13, lines 9 - 12, it is stated that: "It is known that during a "bootstrap" start up, the fuel cells 14, 16, 18 that are not in contact with the current collector 30 quickly rise in temperature compared to the end cell 12 of the stack 10." That is in part because the interior fuel cells 14, 16, 18 are adjacent each other, while one surface of the end cell is not adjacent a heat generating fuel cell, and instead is adjacent the current collector. One skilled in the art as I am realizes that a typical fuel cell stack may contain several hundred fuel cells. During such a "bootstrap" start up, a temperature of fuel cells in the center of the stack increases more quickly than that of end cells. Therefore, it is possible for several fuel cells near an end of the fuel cell stack to lose heat to a prior art pressure plate so that a total rate of heat transfer across an insulator could be greater than the heat generated by an end cell of such a fuel cell stack.

8. At page 16 of the Second Office Action, the Examiner comments on the limitations of specific sensible heat properties of the current collector found in claims 2 - 3 and by inference claim 1, by stating: "Applicant argues with respect to claims 2

- 5... that the properties [of sensible heat] of the current collectors... have patentable weight. Examiner holds the position that these properties are inherent in the materials of the prior art and there is no evidence showing otherwise."

9. In the specification of the above referenced application at page 9, lines 4 - 6, sensible heat is defined as follows: "As is known, sensible heat of an item is the product of its mass multiplied by its specific heat multiplied by a temperature differential over which it is being heated." The specific heat is an inherent feature of the material. However, mass of the object is a design feature, and is a function of the product of the width multiplied by height multiplied by thickness multiplied by density. In each independent claim, the thickness of the current collector is claimed as "no greater than 1.00 millimeter thick." Therefore, the specific, claimed limitations of the sensible heat of the current collector is not inherent from the materials used in the prior art because those materials do not disclose the claimed combination of the described inherent and design features.

I, Richard D. Breault hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true. I further state that the above statements were made with the full knowledge that willful false statements and the like are punishable by fine and/or imprisonment, or both, under Section

1001 of Title 18 of the United States Code, and that any such willful false statements may jeopardize the validity of this application or any patent resulting therefrom.

Richard D. Breault Date: 6/12/07

RICHARD D. BREAULT